

technical science and industry becomes year by year more manifest, and it is not by chance that the immense advance made by our industrial life is contemporaneous with the progressive development of the technical university system in Germany. The times are past in which a school of practice sufficed for the engineer. Whoever wishes to be equal to the demands made by technics in our time must go into the battle of life equipped with a solid scientific and technical education." His Majesty also remarked that Silesia had gained for itself an eminent position through the assiduity and spirit of enterprise which had enabled it to develop its coal and iron and its spinning and weaving industries, and he expressed the opinion that the inhabitants were perfectly justified in desiring to have a technical university in their capital. Dr. von Trott zu Solz, Prussian Minister of Ecclesiastical Affairs, addressing the Emperor, recalled the fact that it was King Frederick the Great who laid the foundation of the greatness of the Silesian industries, in that he encouraged the employment of Silesian coal in other industrial districts and overcame the prejudice against Silesian iron.

A CONFERENCE organised by the Joint Committee for the Abolition of Half-time Labour was held on November 23 at the Church House, Westminster, with the Bishop of Birmingham in the chair. The meeting was called to consider the question of the employment of children in mills and factories, and of securing the passage of a Bill through Parliament raising the age of "half-timers" to thirteen. Prof. Sadler, in a letter expressing inability to attend, said it is a drag upon the economic welfare of the country that more than 200,000 children between twelve and fourteen years of age have left the day school for good, and that more than 40,000 more only attend school half time. There is no reason in the nature of things why the number of boys and girls under fourteen who are wholly or partially exempt from day-school attendance should be proportionately six times as numerous in England and Wales as in Scotland. The chairman insisted that it is a ludicrous waste of energy and money to let education stop at the age of fourteen, thirteen, or twelve. The evil is increased by the system of half-time attendance. Two things, he said, are necessary to stop this wastage of education—to abolish the half-time system, except possibly in some very extreme and exceptional circumstances, and to press forward in the matter of continuation schools. If continuation schools are to be made a real force, the hours of work in shops must be restricted. It is physiologically certain that it is impossible to get real good out of education so long as the bodies and minds of children are in the main occupied in getting a living. Eventually the following resolution, which was proposed by Lord Sheffield, was carried:—"That this meeting approves of the recommendations of the Departmental Committee on partial exemption, and trusts that legislation, as promised by the Board of Education and unanimously approved by resolution by the House of Lords, may be carried into effect in the first session of the coming Parliament."

In consequence of a suggestion of the Chancellor of the Exchequer made last March to a large deputation from English universities and colleges, a committee of representatives from these educational institutions was appointed to place before the Chancellor suggestions as to the principles of distribution on which, in its opinion, an additional grant to university Colleges might be utilised most effectively. The committee consisted of Mr. A. H. D. Acland, Sir Alfred Hopkinson, F.R.S., Sir Oliver Lodge, F.R.S., Sir Isambard Owen, and the Rev. Dr. A. C. Headlam. Conferences between the Chancellor of the Exchequer and the President of the Board of Education with the committee were held on November 16 and 17. The committee expressed the view that the Treasury Committee, on the advice of which grants are distributed, should take into consideration:—(1) Output.—That is, the extent and character of the work being done, including the number of students, the nature of the instruction given, and research and other work undertaken. (2) Needs in order to carry on the work efficiently: (a) staff, and the remuneration of its members; (b) accommodation and equipment. (3) Development.—The development of work

which the several universities and colleges desire, and would be in a position to undertake effectively with further financial assistance, and having regard to provision already made from private benefactions, or other local support, or which may be obtained for such objects. The committee also pointed out it is essential for the universities and colleges to have freedom as to the mode of expenditure of grants to secure the greatest return from them and to meet constantly-varying conditions. Great importance was attached to the grants being certain, and not liable to diminution, so long as the extent and character of the work are maintained. The Chancellor of the Exchequer expressed himself willing to grant an additional sum to the colleges to be allocated on the lines laid down by the committee, but subject to the condition that sufficient additional local support is forthcoming in each case, not only to maintain the existing activities of the college in conjunction with its existing Treasury grant and to place it on a secure footing in regard to its capital liabilities and requirements, but to meet a suitable proportion of the cost of maintenance of the new developments adopted. He was prepared to increase the total grant by 50,000, and promised (subject, of course, to compliance with the minimum conditions as to character, efficiency, &c., which any college is already required to fulfil in order to participate in the grant at all) not to reduce the existing grants to the several colleges.

#### SOCIETIES AND ACADEMIES.

LONDON.

**Geological Society**, November 9.—Prof. W. W. Watts, F.R.S., president, in the chair.—**L. Richardson**: The Rhætic and contiguous deposits of west, mid, and part of east Somerset. This paper contains an account of the Rhætic strata of Somerset. The sections at Blue Anchor and Lilstock are described and correlated with those on the Glamorgan coast. The record by Prof. Boyd Dawkins of Rhætic mollusca in the top portion of the Grey Marls is confirmed, and their recognition as Rhætic is substantiated. The deposit between the top of the fossiliferous Grey Marls or "Sully beds" and the main bone-bed at Blue Anchor measures 22 feet, and teems with Rhætic fossils. The beds above the bone-bed agree well with those occupying the same stratigraphical position in Glamorgan. The now obscured sections, that were to be seen in the railway-cuttings at Langport and Charlton Mackrell, noticed by Mr. H. B. Woodward, are described. Huge boulder-like masses of rock were noted at the top of the Black Shales, and the White Lias proper, with a well-marked coral-bed, totalled 25 feet in thickness. The classic sections of Snake Lane, Dunball (Puriton), Sparkford Hill (Queen Camel), Shepton Mallet, and Milton (Wells), have been reinvestigated, and the thin Rhætic deposits in Valls Vale, at Upper Vobster, and sections in the Radstock district, and on the Nempnett and neighbouring outliers, are described. This investigation has shown that the Microlestes Marls are equivalent to the Sully beds; that the Wedmore Stone occurs well below the bone-bed; that Moore's "flinty bed" at Beer Crowcombe is probably on the horizon of the Pleurophorus bed (No. 13); that the Upper Rhætic is as persistent as usual; that the White Lias proper is of restricted geographical extent; and that on the Bristol Channel littoral are marls, "Watchet beds," above the White Lias. Around Queen Camel, Moore's "insect and crustacean beds" appear to come in at a horizon which lies between the Watchet beds and the Ostrea Limestone. A classification of the Rhætic series is suggested. The fauna of the Rhætic is Swabian in facies, and the conclusion to be derived from the study of the beds is in agreement with Suess's view, that while the dominant movement was one of subsidence and not local but extended, it was, nevertheless, "oscillatory and slow."—**Rev. G. J. Lane**: Jurassic plants from the Marske quarry. The Marske quarry is situated on the northern side of the Upleatham outlier in the Cleveland district of Yorkshire. In the quarry several varieties of rock are

exposed, namely, shales, small coal-seams, sandstones, and a ferruginous bed. The beds are of Lower Oolite age, and belong to the Lower Estuarine series. From this quarry *Dictyozamites* was recorded for the first time in England. The writer has obtained nearly forty species from the quarry, among which are many characteristic Wealden plants.

**Physical Society**, November 11.—Prof. H. L. Callendar, F.R.S., president, in the chair.—Dr. C. Chree: The supposed propagation of equatorial magnetic disturbances with velocities of the order of 100 miles per second. The question of the simultaneity of magnetic disturbances recorded at different stations has recently been discussed by Dr. Bauer and Mr. Faris. A good many magnetic storms have so-called "sudden commencements." As regards these "sudden" changes, three things are conceivable: they may be absolutely simultaneous at different stations; there may be a very small difference of time corresponding to the rate of propagation of electromagnetic waves; or, finally, there may be, as Dr. Bauer concludes, longer intervals, amounting to several minutes, for stations remote from one another. Dr. Bauer concludes that Mr. Faris's figures demonstrate the truth of his theory that disturbances normally are propagated round the earth, sometimes eastwards, sometimes westward, the time of a complete revolution averaging about  $3\frac{1}{2}$  minutes. The author of the present paper discusses the weaknesses of Dr. Bauer's theory. He points out that the theory could be adequately tested by a careful comparison of curves from selected stations fairly encircling the globe, choosing, if possible, stations the time-measurements of which are specially trustworthy.—Prof. W. B. Morton: Cusped waves of light and the theory of the rainbow. Diagrams were shown of the forms assumed by a plane wave of light falling on a spherical raindrop and twice reflected from the interior of the drop, as well as the waves emerging from the drop. The waves in general have cuspid edges, which run along the caustic surfaces. This relation between the caustic and the cusps on the waves was pointed out by Wood in connection with the similar waves produced by reflection at a spherical surface. It had been noticed earlier by Potter, Jamin, and Macé de Lepinay. The phase over a wave of this type is not constant, the two portions on opposite sides of a cusp differing in general by a quarter period. Attention was directed to the advantage of regarding the distribution of light in the rainbow as the consequence of the interference of the cusped waves which run down to the observer's eye along the direction of minimum deviation. This way of looking at the matter is shown to be equivalent to Mascart's approximate method of explanation of the formation of the supernumerary bows by interference of disturbances coming from the two poles on the special wave-form used by Airy.

**Zoological Society**, November 15.—Dr. S. F. Harmer, F.R.S., vice-president, in the chair.—J. Lewis Bonhote: Experiments on the occurrence of the web-foot character in pigeons. After referring to Mr. R. Staples Browne's paper on the subject in the Proc. Zool. Soc. for 1905, in which the web-foot was shown to be a simple Mendelian recessive, Mr. Bonhote instanced further cases from the lofts of Mr. F. W. Smalley that bore out Mr. Staples Browne's conclusions. Both these gentlemen, however, gave the author birds from their strains, and in the first instance when webbed birds from the different strains were crossed an irregular result—namely, four normal and one webbed—was obtained. Matings from these birds were continued, and the results were, in almost every case, contrary to Mendelian expectations, normals throwing webs and webs throwing normals. After discussing various suggestions, Mr. Bonhote came to the conclusion that no really satisfactory explanation was forthcoming. The Mendelian inheritance was apparently there, but dominated and modified by some other agency.—E. Degen: Notes on the little known lizard *Lacerta jacksoni*, Blgr., with special reference to its cranial characters.—G. A. Bouleenger: *Lacerta peloponnesiaca*, Bibr. A new description of this little known lizard, made from living

specimens in the society's gardens, with the view of fixing its correct position in the genus *Lacerta*.—E. G. Boulenger: Remarks on two species of fishes of the genus *Gobius*, from observations made at Roscoff. The paper dealt with the specific distinction of *Gobius minutus* and *G. microps*.

**Linnean Society**, November 17.—Dr. D. H. Scott, F.R.S., president, in the chair.—Prof. G. Henslow: A theoretical origin of *Plantago maritima*, L., and *P. alpina*, L., from *P. Coronopus*, L. Vars. This suggestion arose from the presence of *P. maritima* around the erection of faggots for condensing the brine of the salt-spring of Bad Nauheim, which is some 240 miles from the nearest coast, for M. Lesage proved that fleshiness of maritime plants was the direct result of the presence of salt. *P. Coronopus* has many varieties, and all the characters upon which they are based are very variable; forms approximating the above species are already named.—Prof. G. Henslow: A theoretical origin of Monocotyledons from aquatic Dicotyledons through self-adaptation to an aquatic habit, being supplementary observations to a previous paper (Journ. Linn. Soc., Bot. xxix. [1892], p. 485). The conclusions arrived at are:—(1) Coincidences are innumerable in all parts of monocotyledonous plants with aquatic Dicotyledons. (2) Experimental verification now covers and explains a large proportion of these coincidences. (3) Terrestrial Monocotyledons retain by heredity many of the aquatic characters acquired by their ancestors when living a hydrophytic life, but they are now readapted to a life in air.

#### MELBOURNE.

**Royal Society of Victoria**, October.—Prof. E. W. Skeats in the chair.—T. S. Hall: The systematic position of the species of *Squalodon* and *Zeuglodon* described from Australia and New Zealand. *Squalodon wilkinsoni*, McCoy, *Zeuglodon harwoodi*, Sanger, *Kekenodon onamata*, Hector; and *Prosqualodon australis*, Lydekker, agree in having the molar roots fused, as distinct from the northern hemisphere forms. New genera based on the proportion of crown to fang are proposed, namely, *Parasqualodon (wilkinsoni)* and *Metasqualodon (harwoodi)*.—C. M. Mapstone: Further descriptions of the Tertiary polyzoa of Victoria, part xi. A new family, Synapticellidae, with n.g. *Synapticella* (6 spp.), is founded. The family is allied to Catenicellidae and Eucratidae, but the zoaria are free and rigid, and the zoecia in single series. In all, 38 new species are described.—F. Chapman: A trilobite fauna of Upper Cambrian age (*Olenus* series) in N.E. Gippsland, Victoria. E. O. Thiele found a limestone near Mt. Wellington which he, Skeats, and Dunn hold to be interbedded in slates which on graptolite evidence are Upper Ordovician. The author records *Agnostus*, *Crepicephalus*, and *Ptychoparia*, besides brachipods and a few other forms, all of which are held to show Cambrian affinities.—A. J. Ewart, Jean White, and Bertha Wood: Contributions to the flora of Australia, No. 16. The authors described a new grass, *Sarga*, n.g., from N.W. Australia, a new *Linum* from Tasmania, and others.

#### CAMBRIDGE.

**Philosophical Society**, November 14.—Prof. Wood in the chair.—Prof. Biffen: Some crosses with Rivet wheat. Cases of coupling of roughness of the chaff with grey colour were described from several crosses between subspecies of *Triticum sativum*, and also a case where two varieties normally immune to the attacks of *Claviceps purpurea* gave rise to an *F<sub>2</sub>* generation containing susceptible individuals.—Mrs. D. Thoday and D. Thoday: The inheritance of the yellow tinge in sweet-pea colouring. The yellow tinge in scarlet, salmon, and deep cream sweet peas is found to be very complex in character. In the deepest tinged flowers examined, Queen Alexandra and St. George, the yellow colouring is produced by at least three coincident recessive factors. The three are all independent of one another; two tinge the sap and affect the whole flower, while the third is a plastid character, especially affecting the standard and pro-

ducing marked bicoloured forms. In the absence of yellow plastids the flowers do not "burn," unlike most known salmon or scarlet varieties.—Dr. R. N. Salaman: Demonstration of Mendelian laws of heredity in the potato.—Prof. Wood: The feeding value of mangels. Reference was made to a former communication on the composition of the five types of mangels. The present paper describes a series of feeding trials designed to ascertain if the percentage of dry matter is a fair index of feeding value. Nine experiments are discussed, and the result arrived at is that the percentage of dry matter does indicate the feeding value.—F. H. A. Marshall: Some causes of sterility in cattle. Sterility in some cases was shown to be probably due to a deposition of lipochrome in the ovarian interstitial tissue, associated with follicular degeneration.—F. H. A. Marshall and K. J. J. Mackenzie: Caponising. It was shown that in a case of incomplete caponisation, where pieces of testis of varying sizes had become transplanted on to the intestine and in other abnormal positions, spermatozoa were formed in the testicular grafts in spite of the fact that they were virtually ductless glands; also that the development of the secondary male characters and sexual desire were almost normal, as in the cases described by Foges and Shattock and Seligmann.—F. W. Foreman: Notes on protein hydrolysis. During the hydrolysis of the protein of Linseed the following points worthy of special mention were noted:—(1) By a modification of the ordinary method it was found possible to separate practically the whole of the glutaminic acid as the hydrochloride in the early stages of the hydrolysis. (2) The very high content of valin compared with leucin. (3) The low percentage of tyrosin. (4) The discovery of a basic lead salt of tyrosin, and the possibility of introducing a trustworthy method for the estimation of tyrosin in a mixture of amino-acids obtained from a protein by hydrolysis by precipitating it as this basic lead salt.—K. R. Lewin: Nuclear relations of *Paramecium caudatum* during the asexual period. The micronucleus of *Paramecium caudatum* is not necessary to continued multiplication by fission. By merotomy an amicronucleate race was obtained which maintained itself for seven weeks. This result was not due to fusion of mega- and micronuclei under the stimulus of operation.

## DUBLIN.

Royal Dublin Society, November 22.—Prof. T. Johnson in the chair.—Prof. W. Brown: Mechanical stress and magnetisation of nickel. The author gave the results of experiments on magnetism and torsion of nickel wires when the wires were of different degrees of magnetic softness and of different lengths and diameters, which show several peculiarities in the behaviour of nickel as compared with iron when tested under the same conditions.—Prof. T. Johnson: A seed-bearing Irish pteridosperm—*Lyginodendron Oldhamium*, Willm. The author records the presence in Ireland of the Pteridospermeæ, and gives an account of specimens of *Sphenopteris Hoeninghausi*, Brtg., in the botanical division of the National Museum, Dublin, and especially of one specimen of this in the Geological Survey collection. This specimen shows not only the connection of *S. Hoeninghausi* with the stem of *Lyginodendron*, but also the direct continuity of the fossil known as *Calymmatotheca Stangeri* with *Lyginodendron rachis*. In addition the author describes the presence of a Lagenostoma seed in one of the cupular rosettes of *Calymmatotheca*. The specimen furnishes the evidence of direct continuity in support of the views of Oliver and Scott on the synthetic reconstruction of the Palæozoic pteridosperm *Lyginodendron Oldhamium*.

## PARIS.

Academy of Sciences, November 21.—M. Emile Picard in the chair.—M. Francotte was elected a correspondant in the section of anatomy and zoology in the place of the late M. Van Beneden.—J. Guillaume: Observations of Cerulli's comet made at the Observatory of Lyons. Data are given for November 12 and 16. The comet is of about the tenth magnitude; a small tail was visible on

November 16th.—M. Luizet, J. Guillaume, and J. Merlin: Occultations observed during the total eclipse of the moon of November 16, 1910, at the Observatory of Lyons.—L. Montangerand: Observation of the total eclipse of the moon of November 16, 1910, made at the Observatory of Toulouse.—M. Lebeuf: The total eclipse of the moon of November 16, 1910, observed at the Observatory of Besançon by MM. Chafardet and Goudey.—M. Bourget: Observations of the total eclipse of the moon of November 16, 1910, made at the Observatory of Marseilles.—Robert Jonckheere: The total eclipse of the moon of November 16–17, 1910, at the Observatory of Hem.—E. Cartan: Isotropes capable of development and the method of the mobile trihedron. Eugene Fabry: Order of the singular points of a Taylor's series.—A. Chattelet: The theory of numbers.—T. Lalesco: Resolving nuclei.—Marcel Brillouin: The discontinuous movement of Helmholtz. Curved obstacles.—M. Villat: The resistance of fluids limited by a fixed indefinite wall.—MM. Claude, Ferrié, and Driencourt: Telephonic and radio-telegraphic comparisons of chronometers by the method of coincidences between Paris and Brest. The difference between the two sets of comparisons by telephone and by wireless telegraphy is less than 0.01 sec.; if necessary, the accuracy could be increased.—G. A. Hemdalech: The modifications undergone by the lines of the spark spectrum in a magnetic field. A development of work described in a previous paper. Three classes of phenomena are shown to exist: a general effect independent of the direction of the lines of force of the magnetic field; a longitudinal effect, produced when a spark is parallel to the lines of force; and a transversal effect, produced only with very slow discharges, when the spark is perpendicular to the lines of force. In the present paper observations on the first two of these effects are described and discussed.—G. A. Andraud: A rapid graphical method for measuring the slipping of induction motors.—Francisque Grenet: Study of the porosity of Chamberland filters. The dry filter, placed vertically, is completely filled with mercury, and a fine steel tube passed through a close-fitting stopper is connected with a calibrated glass capillary tube. On plunging the filter into distilled water, the air in the capillaries of the porous pot is driven inwards, causing a rise of the mercury in the glass capillary. Filter tubes of different makes showed large differences in the pressures thus measured, varying from 18 cm. to 2 metres of mercury. These pressures measure the diameters of the pores of the filter.—J. de Kowalski and J. de Dzierzicki: The progressive phosphorescent spectrum of organic compounds at low temperatures. Figures are given for the bands of benzene and nine of its homologues, for phenol, cresols, and xylenols and benzyl alcohol. The results show that progressive phosphorescence is a property which depends essentially on the constitution.—Charles Moureu and J. Ch. Bongrand: Propiolic compounds. Cyanacetylene. Methyl propiolate,  $\text{CH}_3\text{C}(\text{CO}_2\text{CH}_3)_2$ , was converted into propiolamide,  $\text{CH}_3\text{C}(\text{CO})(\text{NH}_2)$ . By the action of phosphorus pentoxide upon this amide, cyanacetylene,  $\text{HC}(\text{C})\text{CN}$ , is obtained. This forms a mobile liquid boiling at 42.5°C., solidifying in ice to a mass of crystals melting at 5°C. The physical and chemical properties of this compound are given in detail.—Casimir Cepede: An improvement of the binocular microscope, increasing the illumination of the objects under observation.—Marcel Mirande: The effects of tarred roads on vegetation. It has been found experimentally that the vapours given off by tar such as is used for treating roads act injuriously on green plants. In the open country the vapours given off by a tarred road would be insufficient to damage vegetation, but in shut-in streets damage to trees planted on the edge of the pavement may be expected.—Jules Amar: Respiratory exchanges after work has been done. The amount of oxygen used by a human subject was measured, first, when at rest, then during work, and finally at regular intervals after cessation of the work. The original consumption of oxygen was reached in from six to eight minutes after the work was stopped. The rate of decrease of oxygen absorption varied with each subject.—Ch. Gravier: The battle for existence in the

madrepores of coral reefs. The forms which succumb in the struggle are those which are large and globular; the arborescent forms have more resisting power.—E. Roubaud : The evolution and history of *Roubandia rufescens*, a parasite of the social African wasps, genera Icaria and Belonogaster.—P. Fabre-Domergue and R. Legendre : The search for *Bacterium coli* in sea water by the methods employed for fresh water. All the usual tests for coli in fresh water are retarded in their action by the presence of common salt. Certain modifications of technique necessitated by this fact are suggested. The question has arisen in connection with the control of oyster beds.—J. Couyat and P. H. Fritel : The presence of plant impressions in the Nubian grit in the neighbourhood of Assouan.

## CAPE TOWN.

Royal Society of South Africa, October 19.—Mr. S. S. Hough, F.R.S., president, in the chair.—A. G. Howard : An investigation into the land and sea breezes conditions at Port Elizabeth. A second contribution to the meteorology of South Africa.—E. T. Littlewood : Graphical representation of some of the simpler analytic functions of a complex variable. The modulus of the function corresponding to each point of the (horizontal)  $xy$  plane was represented by the length of a vertical line erected at that point, the upper extremities of these lines forming a ("modular") surface, while the argument was represented by a family of curves ("stream lines") drawn in the  $xy$  plane. Certain general results were established and methods given. In the models, the surface was suggested by a wire framework, which usually illustrated contour lines and vertical sections, while the stream lines, drawn on the horizontal base of the model, were visible through the framework. The simpler algebraic, circular, exponential, and logarithmic functions were thus treated.

## DIARY OF SOCIETIES.

## THURSDAY, DECEMBER 1.

LINNEAN SOCIETY, at 8.—Spermatogenesis in *Stenobothrus* : Capt. C. F. U. Meek.—Reports on the International Botanical Congress at Brussels, 1910 : Dr. Otto Stapf and others.

RÖNTGEN SOCIETY, at 8.15.—Osmotic Growths : Dr. Deane Butcher.

## FRIDAY, DECEMBER 2.

GEOLOGISTS' ASSOCIATION, at 8.—The Geology of Natal : Dr. F. H. Hatch.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Scherzer Rolling-lift Bridge over the River Tawe, at Swansea : J. H. Morris.

## MONDAY, DECEMBER 5.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—The Geographical Aspects of the Problem of Empire Cotton Growing : J. Howard Reed.

ROYAL SOCIETY OF ARTS, at 8.—Industrial Pyrometry : C. R. Darling. ARISTOTELIAN SOCIETY, at 8.—A Defect in the Current Logical Formulation of the Basis of Induction : Bernard Bosanquet.

VICTORIA INSTITUTE, at 4.30.—The Theory of Jurisprudence : Judge G. H. Smith.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Analytical Constants of Shellac, Lac-resin and Lac-wax : Puran Singh.—Theory of Dyeing : Resolution after Treatment with Acids, &c. : W. P. Dreaper and A. Wilson.—Some Indian Oils and Fats : A. Kesava Menon.

## TUESDAY, DECEMBER 6.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Further discussion : Portland Cement, and the Question of its Aeration : H. K. G. Bamber.

## WEDNESDAY, DECEMBER 7.

ROYAL SOCIETY OF ARTS, at 8.—The Panama Canal in 1910 : Dr. Vaughan Cornish.

SOCIETY OF PUBLIC ANALYSTS, at 8.—On Fischer's Modification of Volhard's Method for the Estimation of Manganese, and its Comparison with other well known Methods : E. Cahen and H. F. V. Little.—Note on the Composition of British Wines : E. Russell and T. R. Hodgson. A New Volumetric Process for the Estimation of Tungsten : Dr. E. Knecht and E. Hibbert.—A New Volumetric Process for the Estimation of Molybdenum : Dr. E. Knecht and F. W. Atack.—The Degree of Accuracy with which the Proteins of Milk can be Estimated by the Aldehyde Method : H. D. Richmond.—Note on Gorgonzola Cheese : E. Hinks.—Tests for Cocaine and certain Cocaine Substitutes : Dr. E. H. Hankin.

ENTOMOLOGICAL SOCIETY, at 8.

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## THURSDAY, DECEMBER 8.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Colour-blindness and the Trichromatic Theory. Part II. Incomplete Red or Green Blindness : Sir W. de W. Abney, K.C.B., F.R.S.—On the Sensibility of the Eye to Variations of Wave-length in the Yellow Region of the Spectrum : Lord Rayleigh, O.M., F.R.S.—(1) Trypanosome Diseases of Domestic Animals in Uganda. IV. *Trypanosoma uniforme*, sp. nov.; (2) Trypanosome Diseases of Domestic Animals in Uganda. V. *Trypanosoma nanum*. (Laveran) : Colonel Sir D. Bruce, C.B., F.R.S., and others.—Some Enumerative Studies on Malarial Fever : Major R. Ross, C.B., F.R.S., and D. Thomson.—On Haemoglobin Metabolism in Malarial Fever : G. C. E. Simpson.—A Case of Sleeping Sickness studied by precise Enumerative Methods. Further Observations : Major R. Ross, C.B., F.R.S., and D. Thomson.—Enumerative Studies on *Trypanosoma gambiense* and *Trypanosoma rhodensiense* in Rats, Guinea-pigs, and Rabbits ; Periodic Variations disclosed : Dr. H. B. Fantham and J. G. Thomson.—The Life History of *Trypanosoma gambiense* and *Trypanosoma rhodensiense* as seen in Rats and Guinea-pigs : Dr. H. B. Fantham.—Experiments on the Treatment of Animals infected with Trypanosomes, by means of Atoxyl, Vaccines, Cold, X-rays, and Leucocytic Extract ; Enumerative Methods employed : Major R. Ross, C.B., F.R.S., and J. G. Thomson.

MATHEMATICAL SOCIETY, at 5.30.—(1) Properties of Logarithmic-exponential Functions ; (2) Some Results concerning the Increase of Functions defined by an Algebraic Differential Equation of the First Degree : G. H. Hardy.—Optical Geometry of Motion : A. A. Robb.—(1) Note on the Pellian Equation ; (2) A Property of the Number 7 : T. C. Lewis.—On the Arithmetical Theory of Binary Cubic Forms : G. B. Mathews.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Magnetic Properties of Iron and its Alloys in Intense Fields : Sir R. Hadfield, F.R.S., and Prof. B. Hopkinson, F.R.S.

## FRIDAY, DECEMBER 9.

ROYAL ASTRONOMICAL SOCIETY, at 5.

ILLUMINATING ENGINEERING SOCIETY, at 8.—Recent Progress in Electrical Lighting : Prof. E. W. Marchant.

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